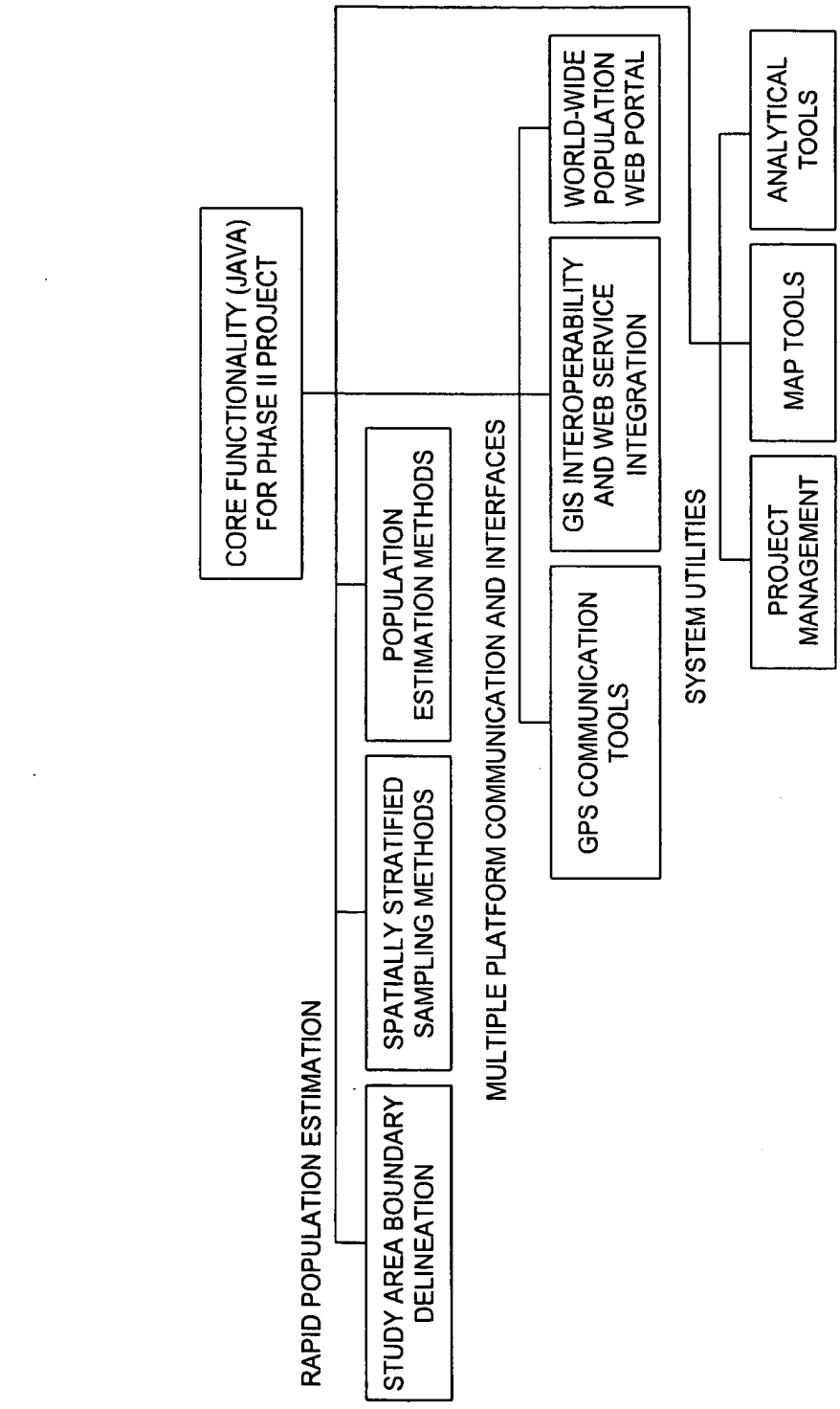
CORE FUNCTIONALITY (JAVA) FOR PHASE II PROJECT
RAPID POPULATION ESTIMATION
STUDY AREA BOUNDARY DELINEATION
SPATIALLY STRATIFIED SAMPLING METHODS
POPULATION ESTIMATION METHODS
MULTIPLE PLATFORM COMMUNICATION AND INTERFACES
GPS COMMUNICATION TOOLS
GIS INTEROPERABILITY AND WEB SERVICE INTEGRATION
WORLD-WIDE POPULATION WEB PORTAL
SYSTEM UTILITIES
PROJECT MANAGEMENT
MAP TOOLS
ANALYTICAL TOOLS

FIG. 1

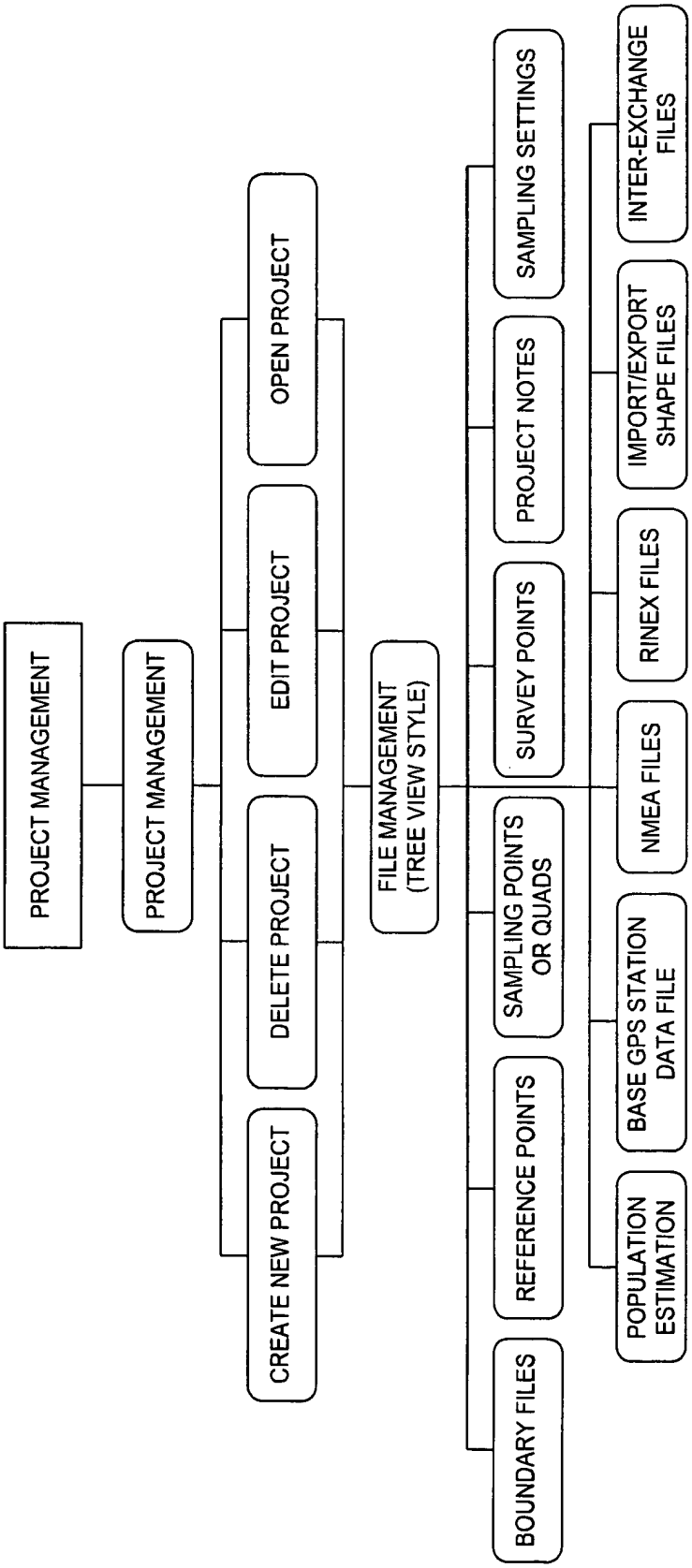
PROJECT MANAGEMENT
PROJECT MANAGEMENT
CREATE NEW PROJECT
DELETE PROJECT
EDIT PROJECT
OPEN PROJECT
FILE MANAGEMENT (TREE VIEW STYLE)
BOUNDARY FILES
REFERENCE POINTS
SAMPLING POINTS OR QUADS
SURVEY POINTS
PROJECT NOTES
SAMPLING SETTINGS
POPULATION ESTIMATION
BASE GPS STATION DATA FILE
NMEA FILES
RINEX FILES
IMPORT/EXPORT SHAPE FILES
INTER-EXCHANGE FILES

FIG. 2

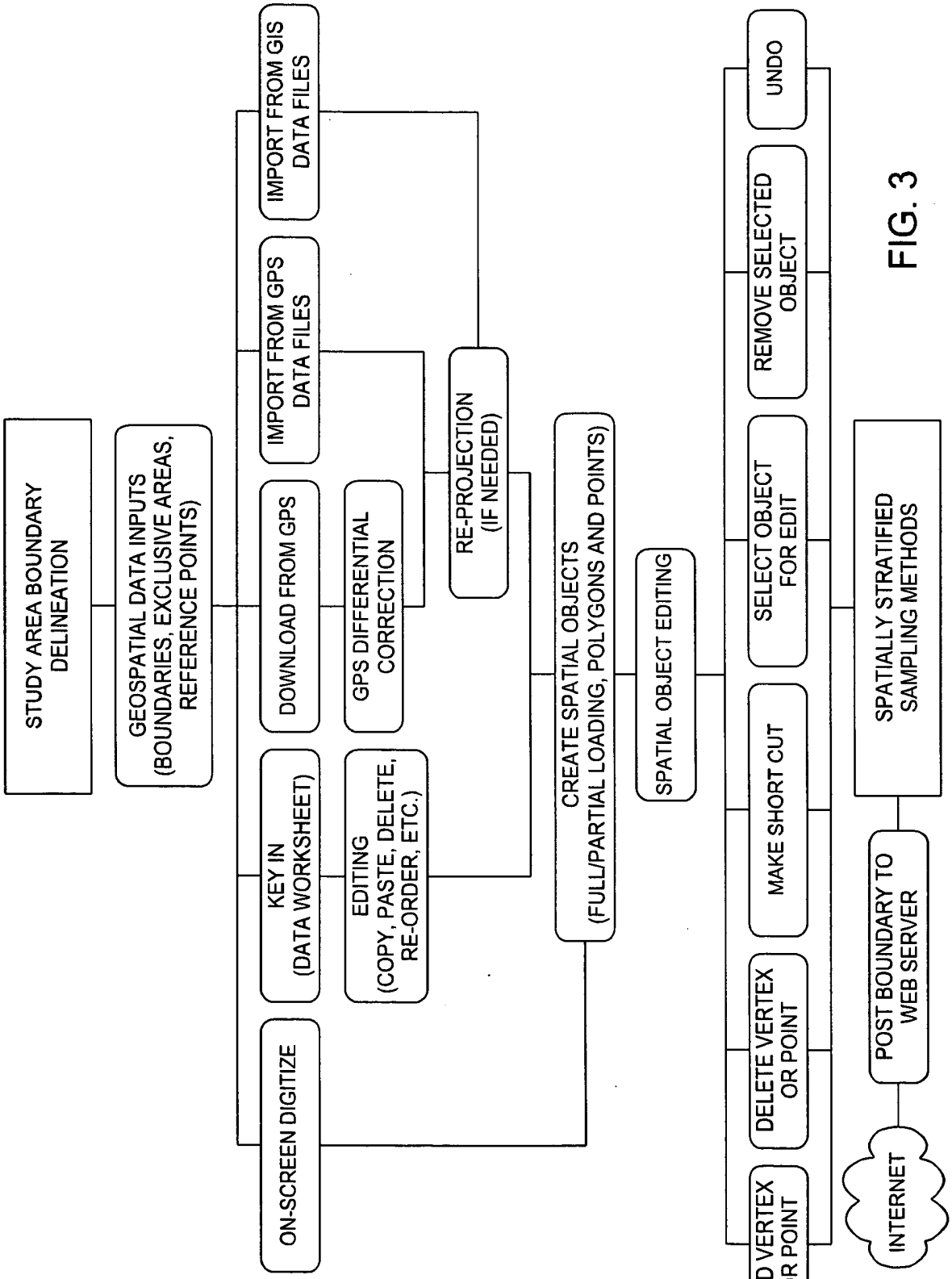
STUDY AREA BOUNDARY DELINEATION
GEOSPATIAL DATA INPUTS (BOUNDARIES, EXCLUSIVE AREAS, REFERENCE POINTS)
ON-SCREEN DIGITIZE
KEY IN (DATA WORKSHEET)
EDITING (COPY, PASTE, DELETE, RE-ORDER, ETC.)
DOWNLOAD FROM GPS
GPS DIFFERENTIAL CORRECTION
IMPORT FROM GPS DATA FILES
IMPORT FROM GIS DATA FILES
RE-PROJECTION (IF NEEDED)
CREATE SPATIAL OBJECTS (FULL/PARTIAL LOADING, POLYGONS AND POINTS)
SPATIAL OBJECT EDITING
ADD VERTEX OR POINT
DELETE VERTEX OR POINT
MAKE SHORT CUT
SELECT OBJECT FOR EDIT
REMOVE SELECTED OBJECT
UNDO
INTERNET
POST BOUNDARY TO WEB SERVER
SPATIALLY STRATIFIED SAMPLING METHODS

FIG. 3

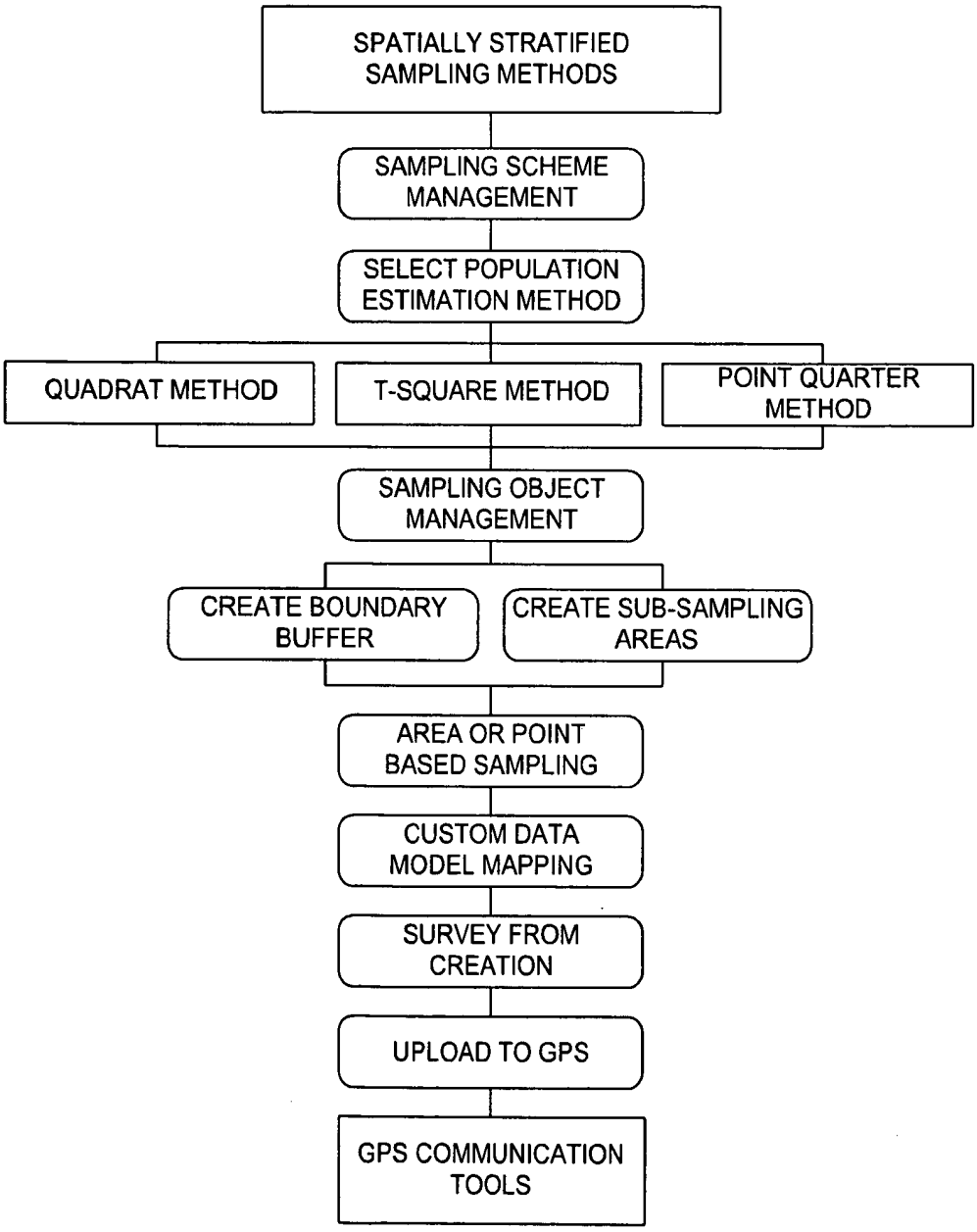
SPATIALLY STRATIFIED SAMPLING METHODS
SAMPLING SCHEME MANAGEMENT
SELECT POPULATION ESTIMATION METHOD
QUADRAT METHOD
T-SQUARE METHOD
POINT QUARTER METHOD
SAMPLING OBJECT MANAGEMENT
CREATE BOUNDARY BUFFER
CREATE SUB-SAMPLING AREAS
AREA OR POINT BASED SAMPLING
CUSTOM DATA MODEL MAPPING
SURVEY FROM CREATION
UPLOAD TO GPS
GPS COMMUNICATION TOOLS

FIG. 4

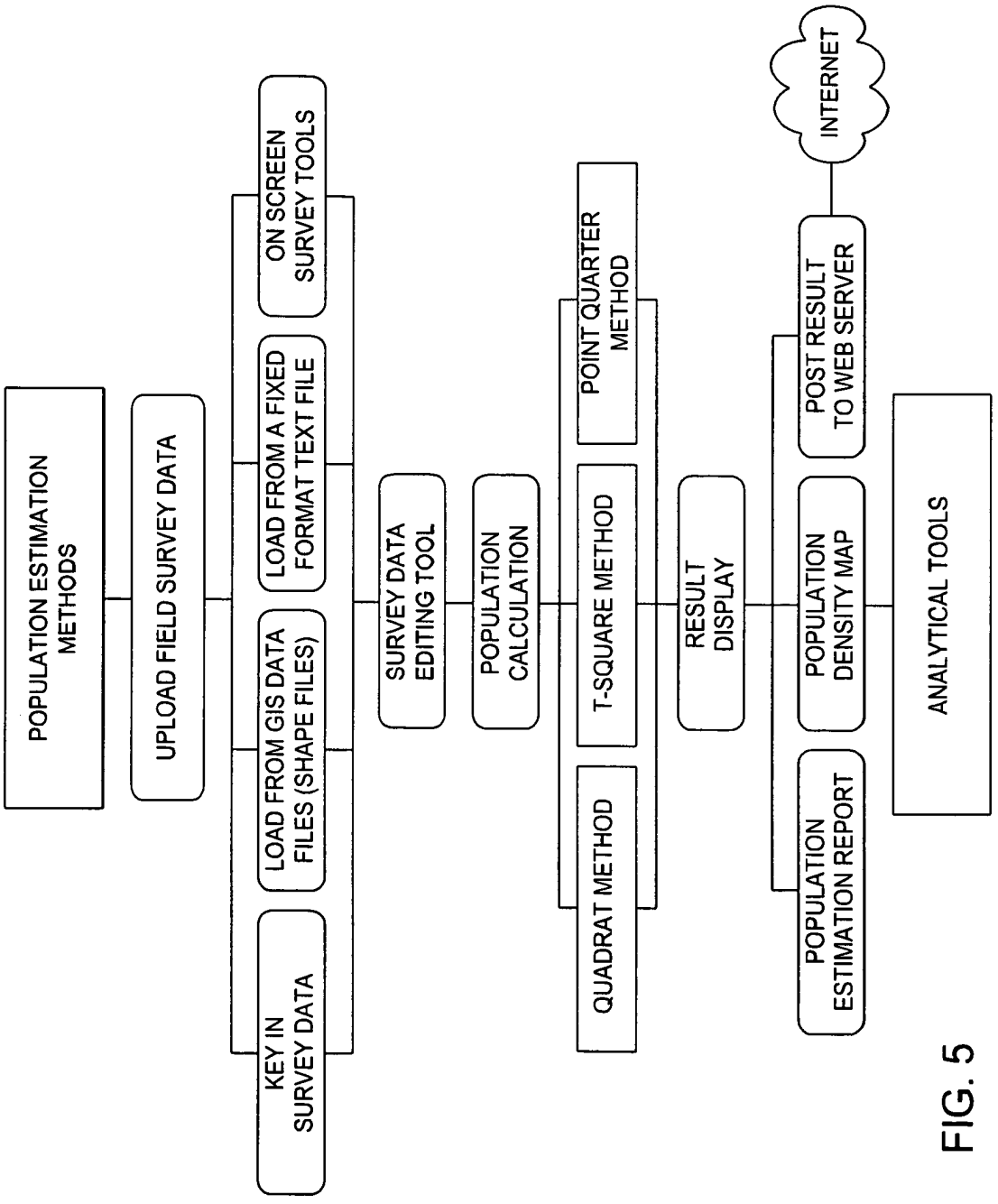
POPULATION ESTIMATION METHODS
UPLOAD FIELD SURVEY DATA
KEY IN SURVEY DATA
LOAD FROM GIS DATA FILES (SHAPE FILES)
LOAD FROM A FIXED FORMAT TEXT FILE
ON SCREEN SURVEY TOOLS
SURVEY DATA EDITING TOOL
POPULATION CALCULATION
QUADRAT METHOD
T-SQUARE METHOD
POINT QUARTER METHOD
RESULT DISPLAY
POPULATION ESTIMATION REPORT
POPULATION DENSITY MAP
POST RESULT TO WEB SERVER
INTERNET
ANALYTICAL TOOLS

FIG. 5

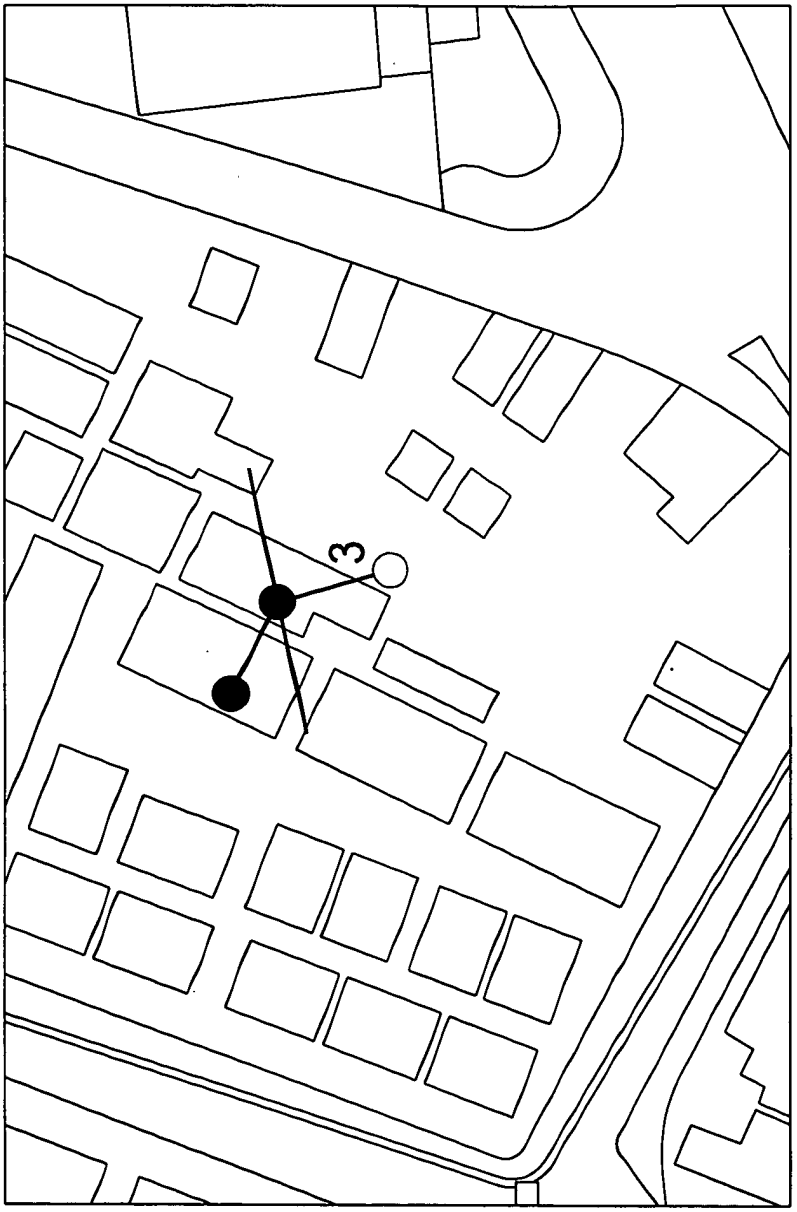

FIG. 6

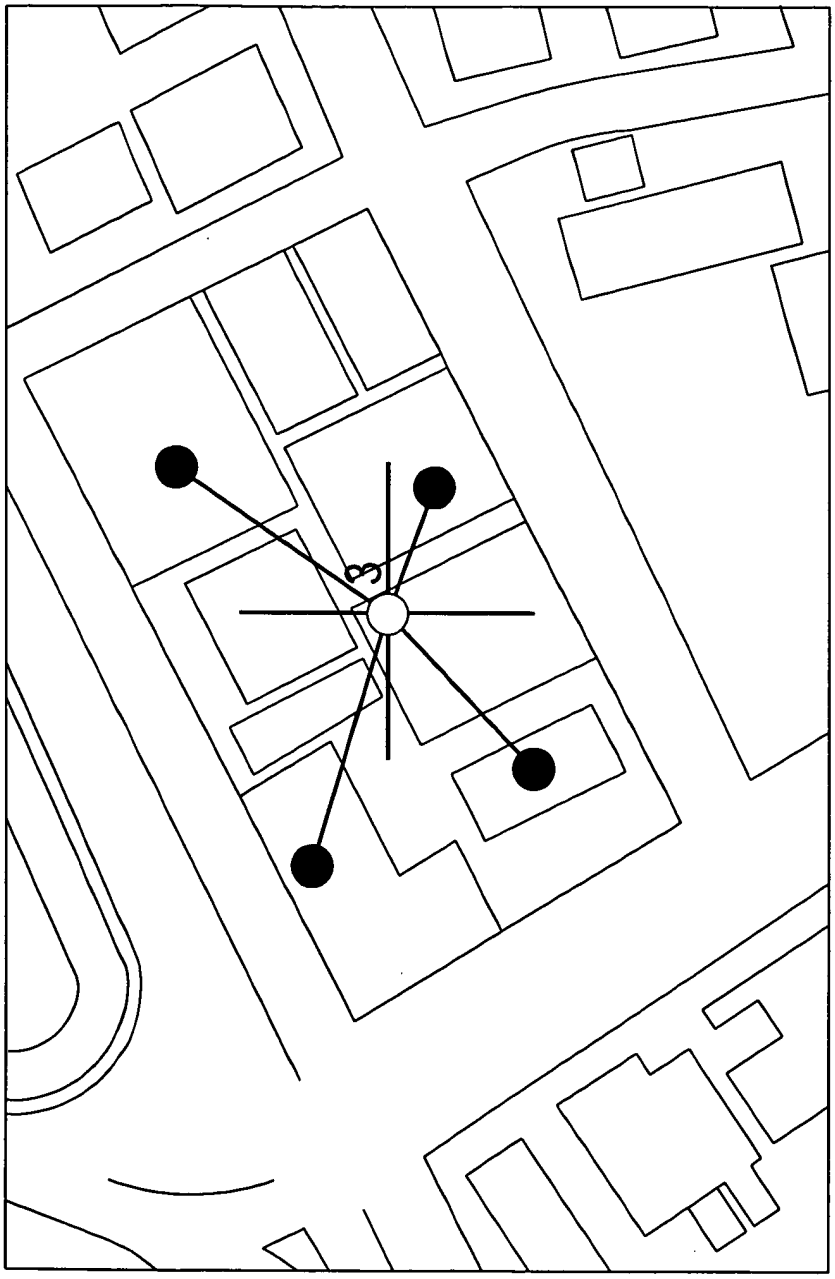

FIG. 7

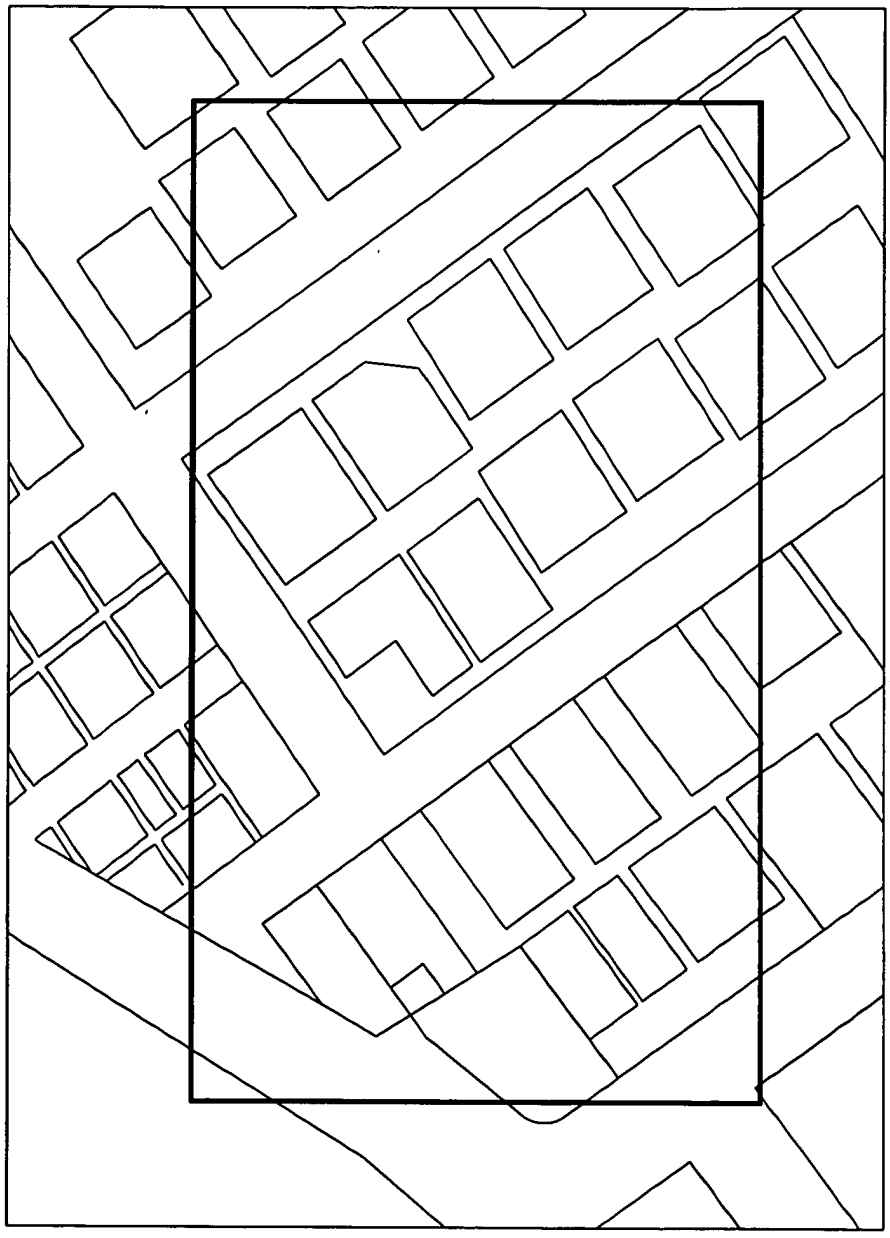

FIG. 8

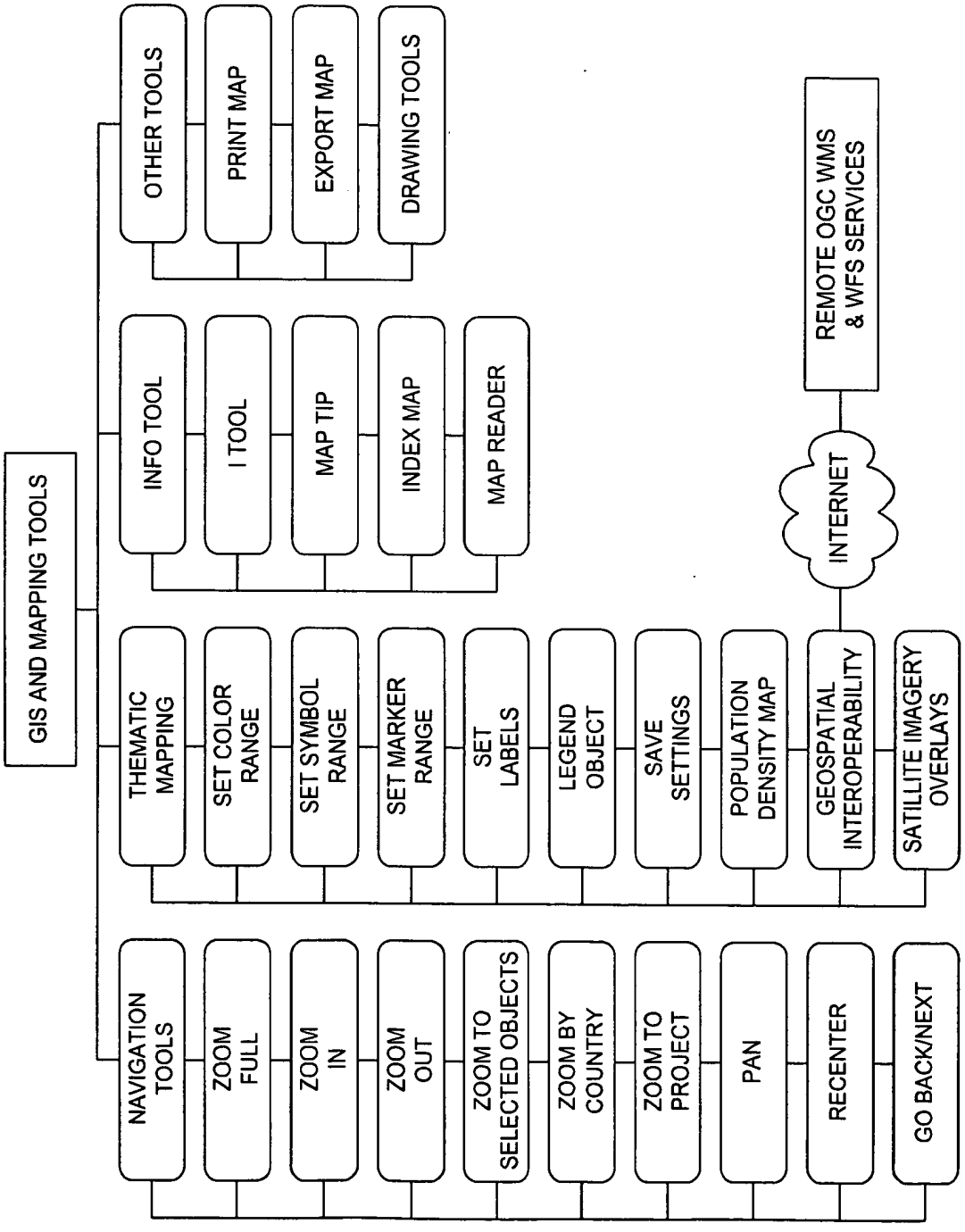
GIS AND MAPPING TOOLS
NAVIGATION TOOLS
ZOOM FULL
ZOOM IN
ZOOM OUT
ZOOM TO SELECTED OBJECTS
ZOOM BY COUNTRY
ZOOM TO PROJECT
PAN
RECENTER
GO BACK/NEXT
THEMATIC MAPPING
SET COLOR RANGE
SET SYMBOL RANGE
SET MARKER RANGE
SET LABELS
LEGEND OBJECT
SAVE SETTINGS
POPULATION DENSITY MAP
GEOSPATIAL INTEROPERABILITY
SATILLITE IMAGERY OVERLAYS
INFO TOOL
I TOOL
MAP TIP
INDEX MAP
MAP READER
OTHER TOOLS
PRINT MAP
EXPORT MAP
DRAWING TOOLS
INTERNET
REMOTE OGC WMS & WFS SERVICES

FIG. 9

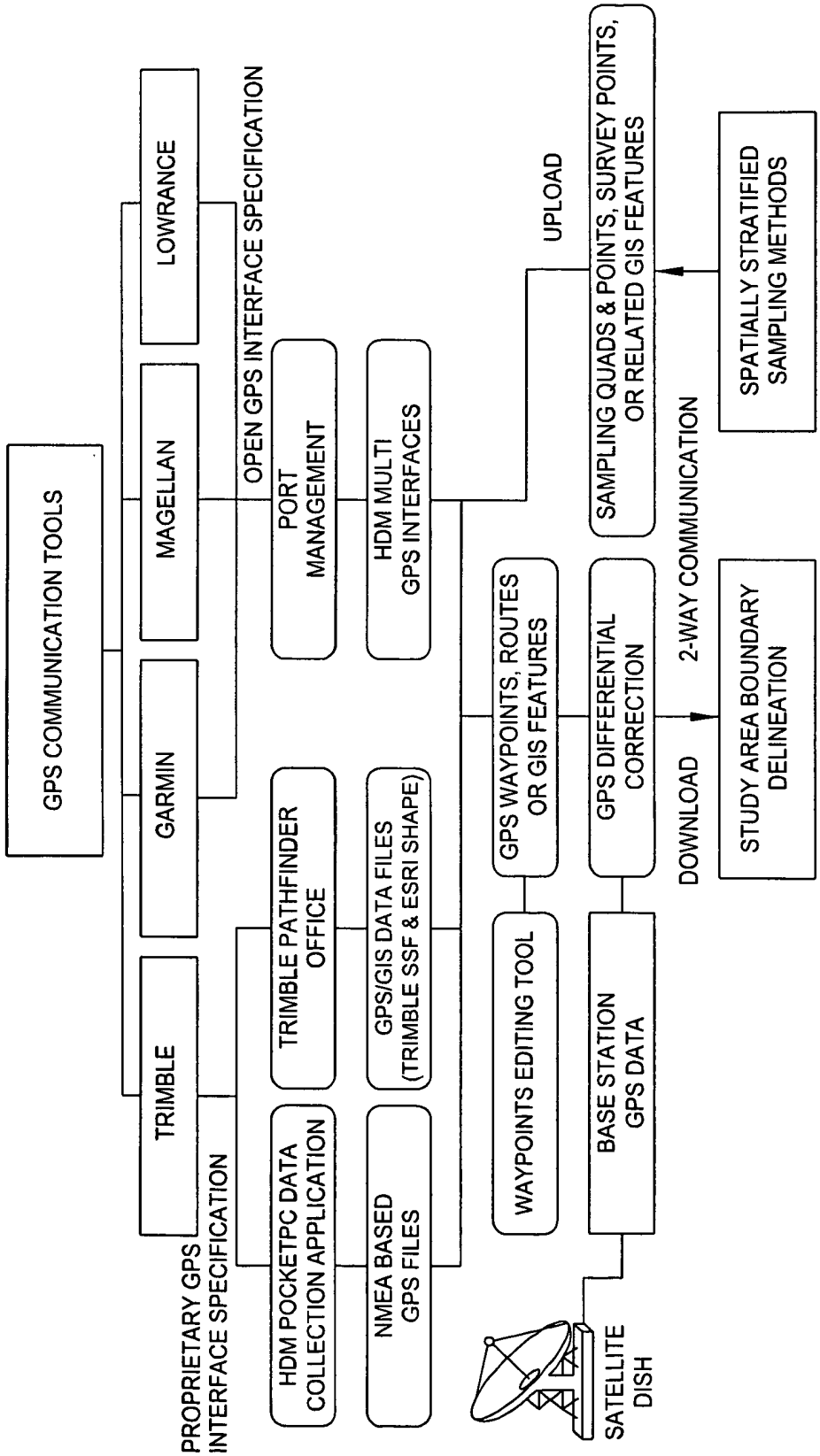
GPS COMMUNICATION TOOLS
TRIMBLE
GARMIN
MAGELLAN
LOWRANCE
PROPRIETARY GPS INTERFACE SPECIFICATION
OPEN GPS INTERFACE SPECIFICATION
HDM POCKETPC DATA COLLECTION APPLICATION
TRIMBLE PATHFINDER OFFICE
PORT MANAGEMENT
NMEA BASED GPS FILES
GPS/GIS DATA FILES (TRIMBLE SSF & ESRI SHAPE)
HDM MULTI GPS INTERFACES
WAYPOINTS EDITING TOOL
GPS WAYPOINTS, ROUTES OR GIS FEATURES
UPLOAD
SAMPLING QUADS & POINTS, SURVEY POINTS, OR RELATED GIS FEATURES
BASE STATION GPS DATA
GPS DIFFERENTIAL CORRECTION
DOWNLOAD
2-WAY COMMUNICATION
SATELLITE DISH
STUDY AREA BOUNDARY DELINEATION
SPATIALLY STRATIFIED SAMPLING METHODS

FIG. 10

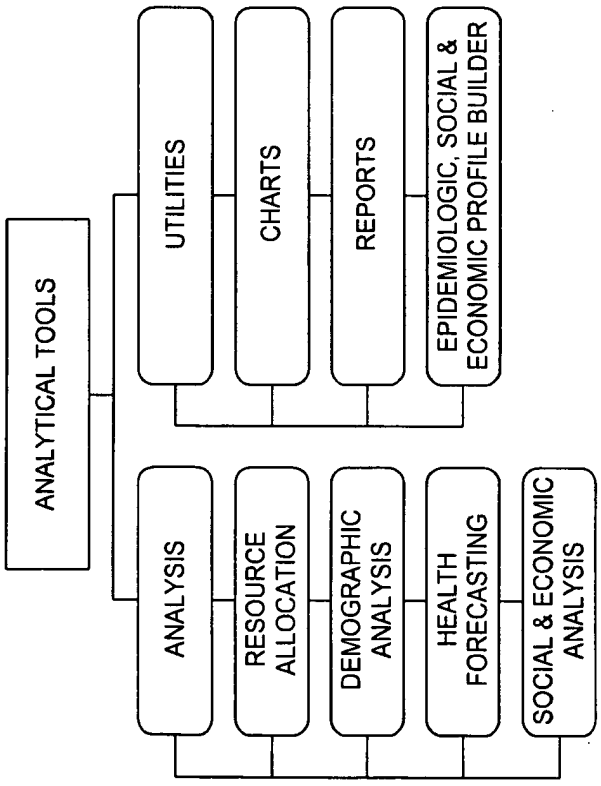
ANALYTICAL TOOLS
UTILITIES
CHARTS
REPORTS
EPIDEMIOLOGIC, SOCIAL & ECONOMIC PROFILE BUILDER
ANALYSIS
RESOURCE ALLOCATION
DEMOGRAPHIC ANALYSIS
HEALTH FORECASTING
SOCIAL & ECONOMIC ANALYSIS

FIG. 11

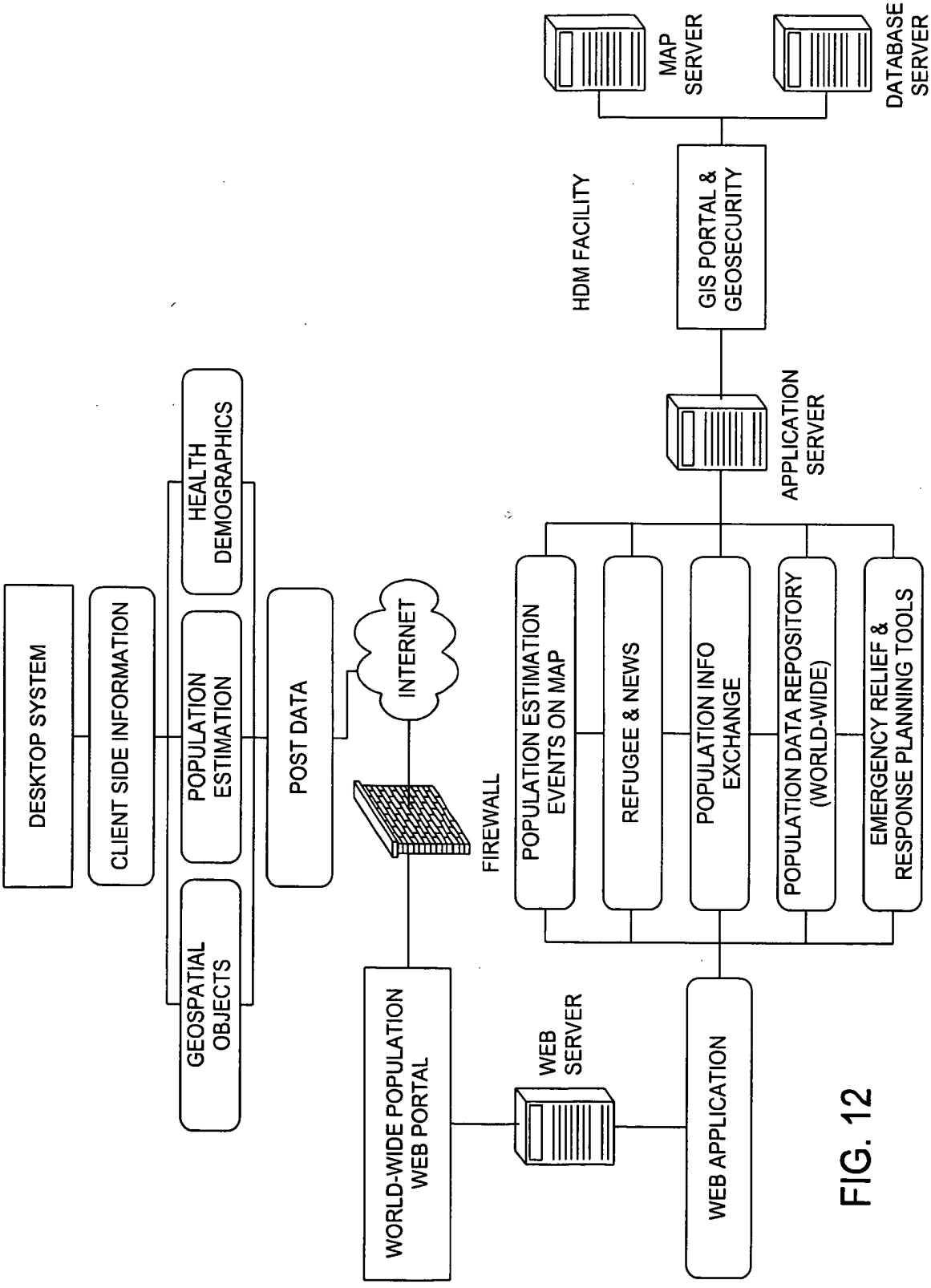
DESKTOP SYSTEM
CLIENT SIDE INFORMATION
GEOSPATIAL OBJECTS
POPULATION ESTIMATION
HEALTH DEMOGRAPHICS
POST DATA
INTERNET
FIREWALL
WORLD-WIDE POPULATION WEB PORTAL
WEB SERVER
WEB APPLICATION
POPULATION ESTIMATION EVENTS ON MAP
REFUGEE & NEWS
POPULATION INFO EXCHANGE
POPULATION DATA REPOSITORY (WORLD-WIDE)
EMERGENCY RELIEF & RESPONSE PLANNING TOOLS
APPLICATION SERVER
HDM FACILITY
GIS PORTAL & GEOSECURITY
MAP SERVER
DATABASE SERVER

FIG. 12

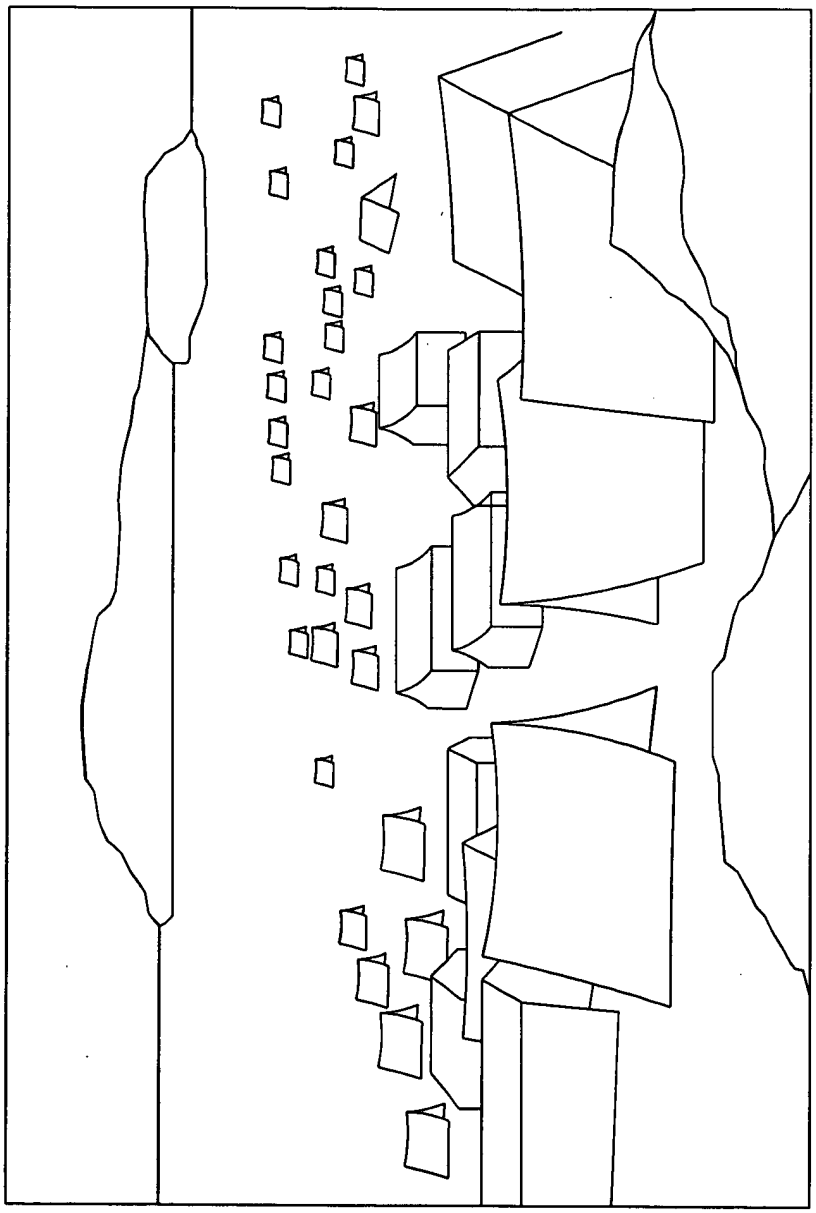

FIG. 13

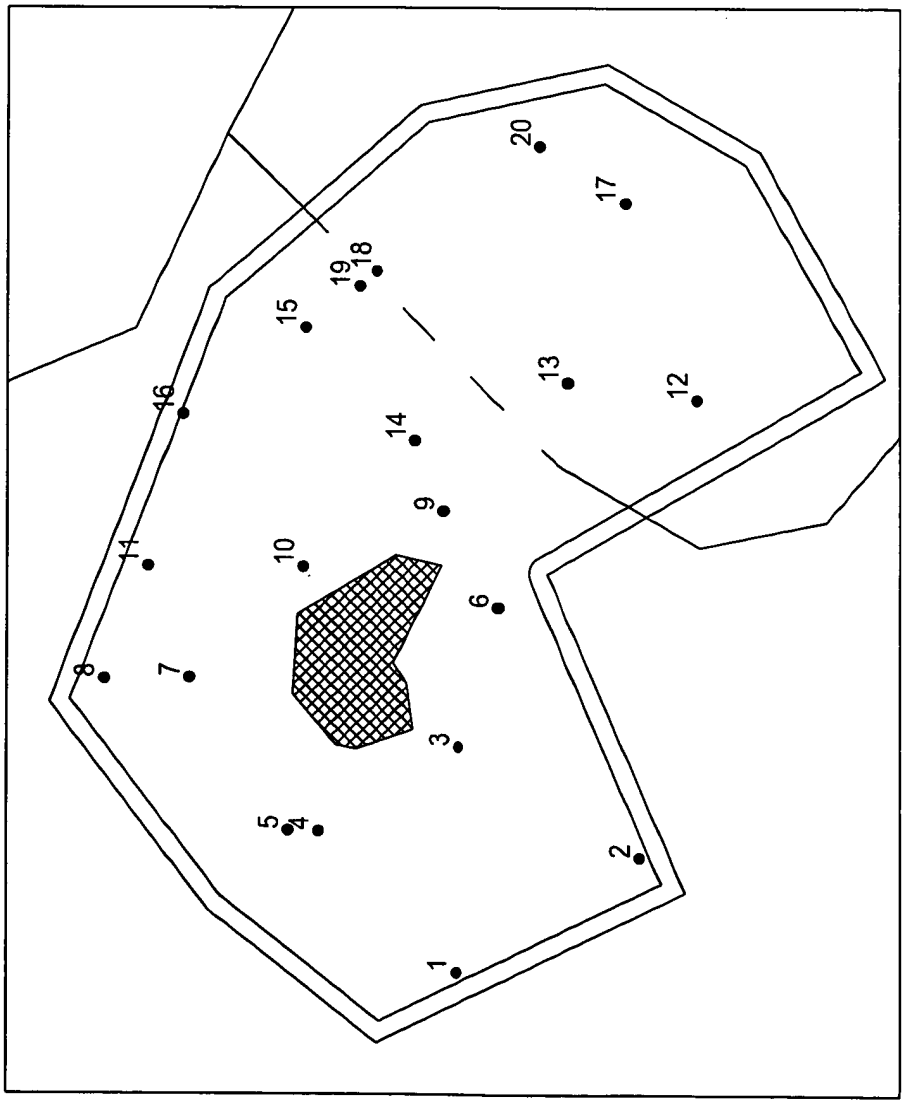

FIG. 14

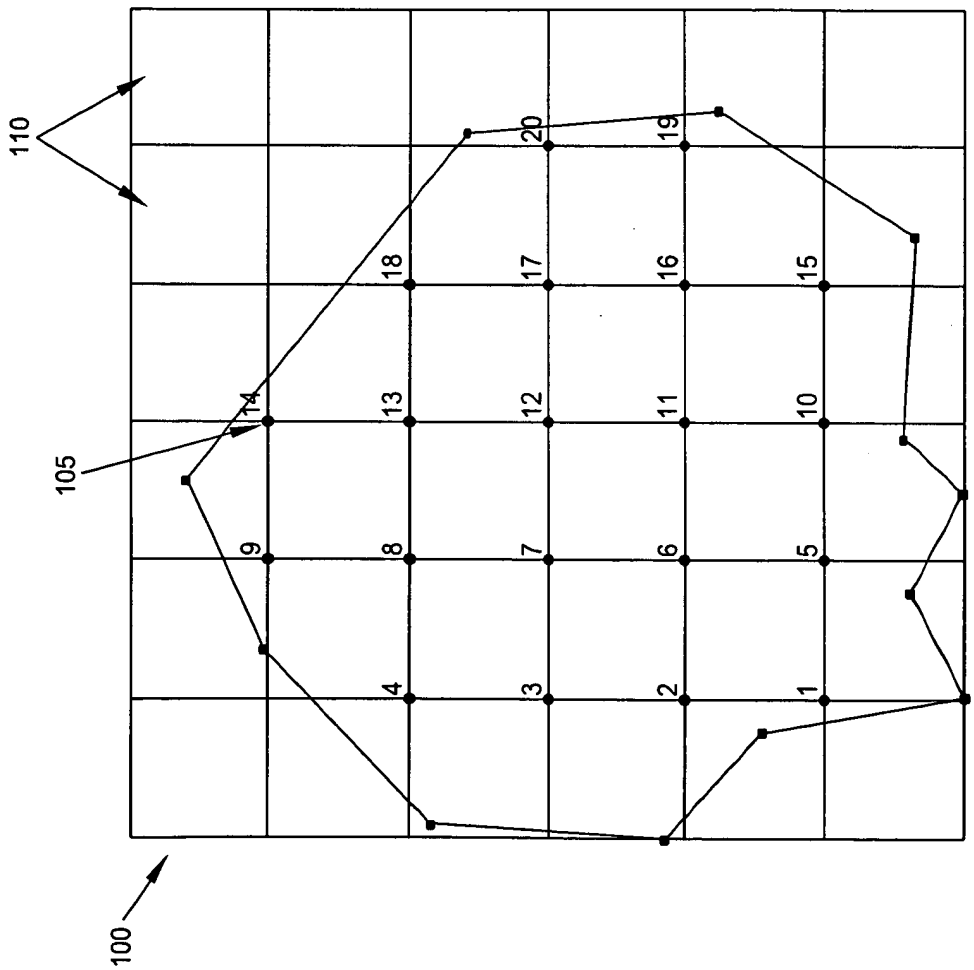

FIG. 15

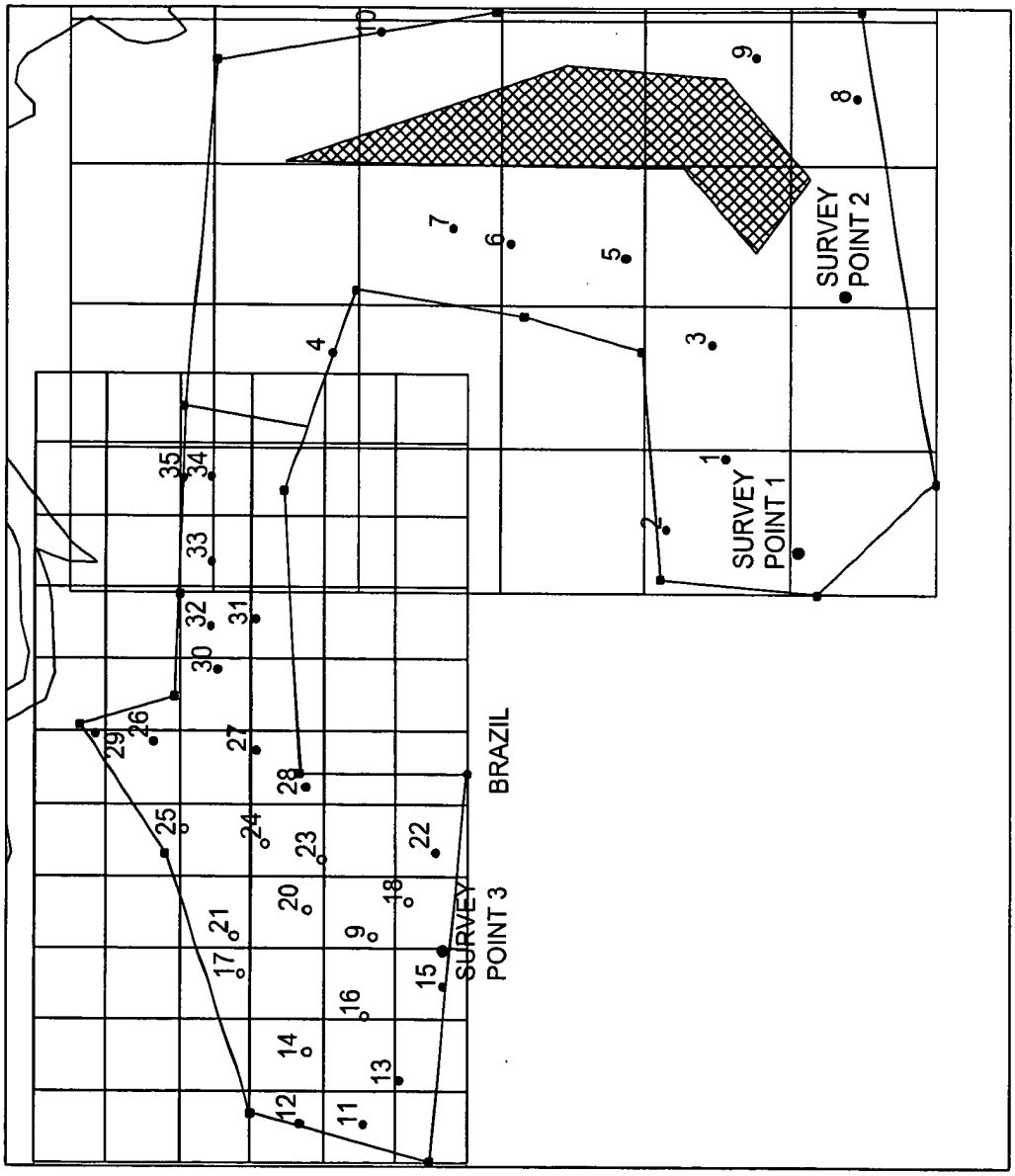

FIG. 16

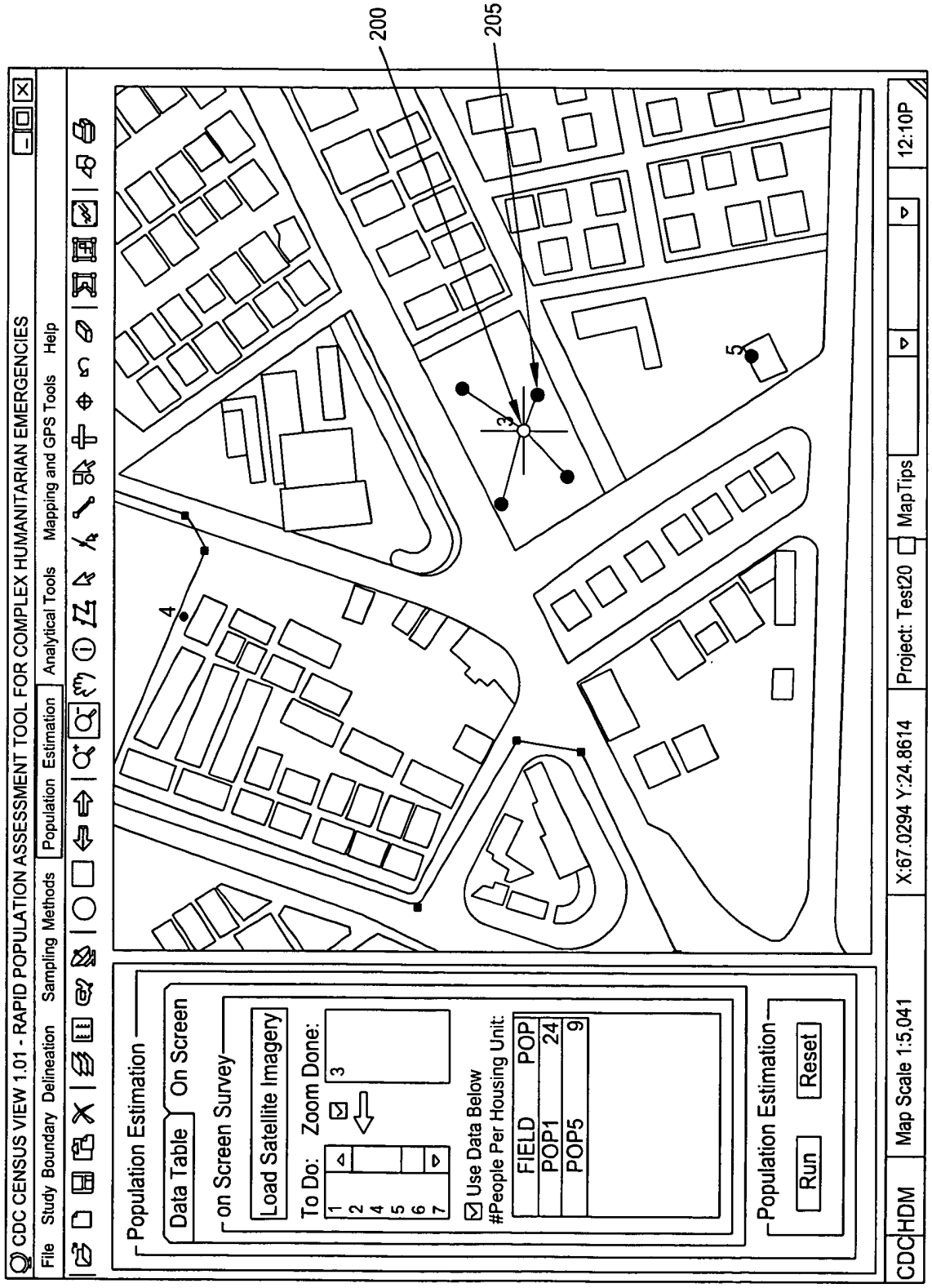
200
205
CDC CENSUS VIEW 1.01 - RAPID POPULATION ASSESSMENT TOOL FOR COMPLEX HUMANITARIAN EMERGENCIES
File Study Boundary Delineation Sampling Methods Population Estimation Analytical Tools Mapping and GPS Tools Help
Population Estimation
Data Table On Screen
on Screen Survey
Load Satellite Imagery
To Do: Zoom Done:
1 2 4 5 6 7
3
Use Data Below
#People Per Housing Unit:
FIELD POP
POP1 24
POP5 9
Population Estimation
Run Reset
4
3
5
CDC HDM
Map Scale 1:5,041
X:67.0294 Y:24.8614
Project: Test20
MapTips
12:10P

FIG. 17

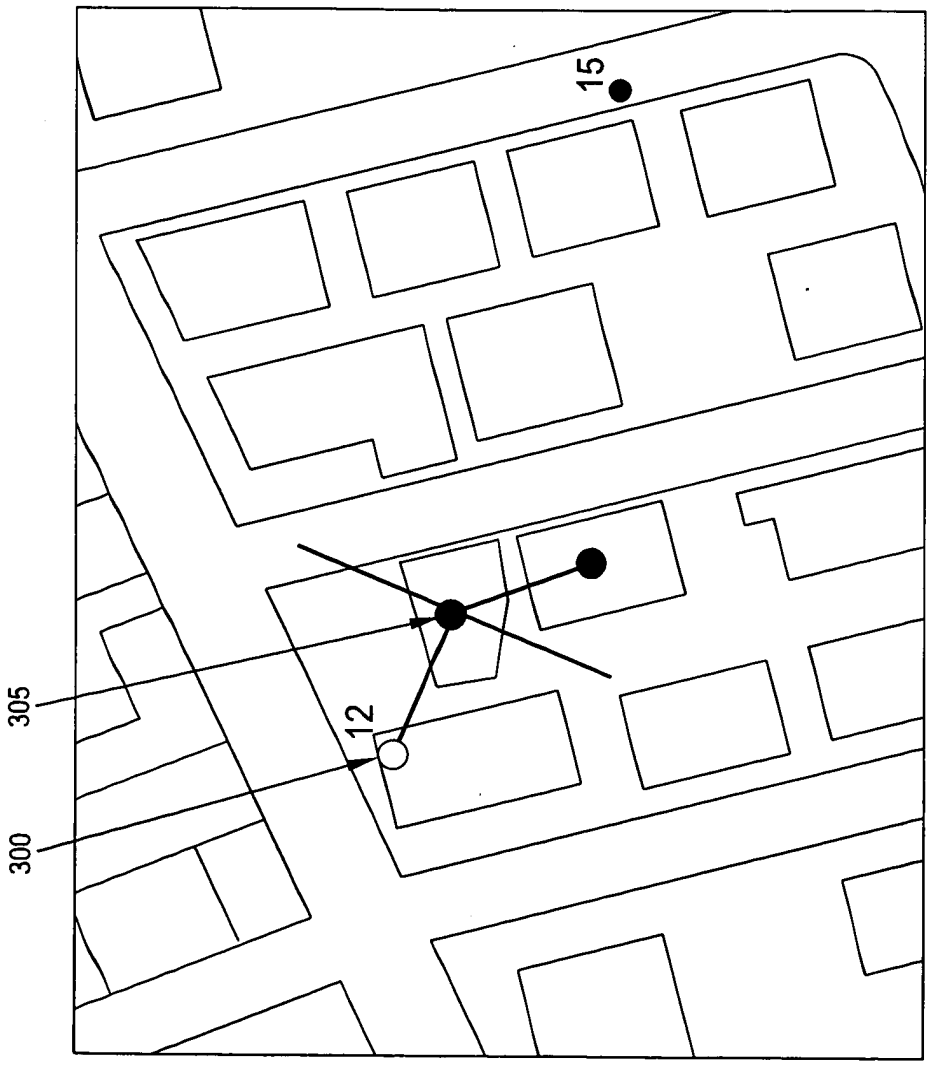

FIG. 18

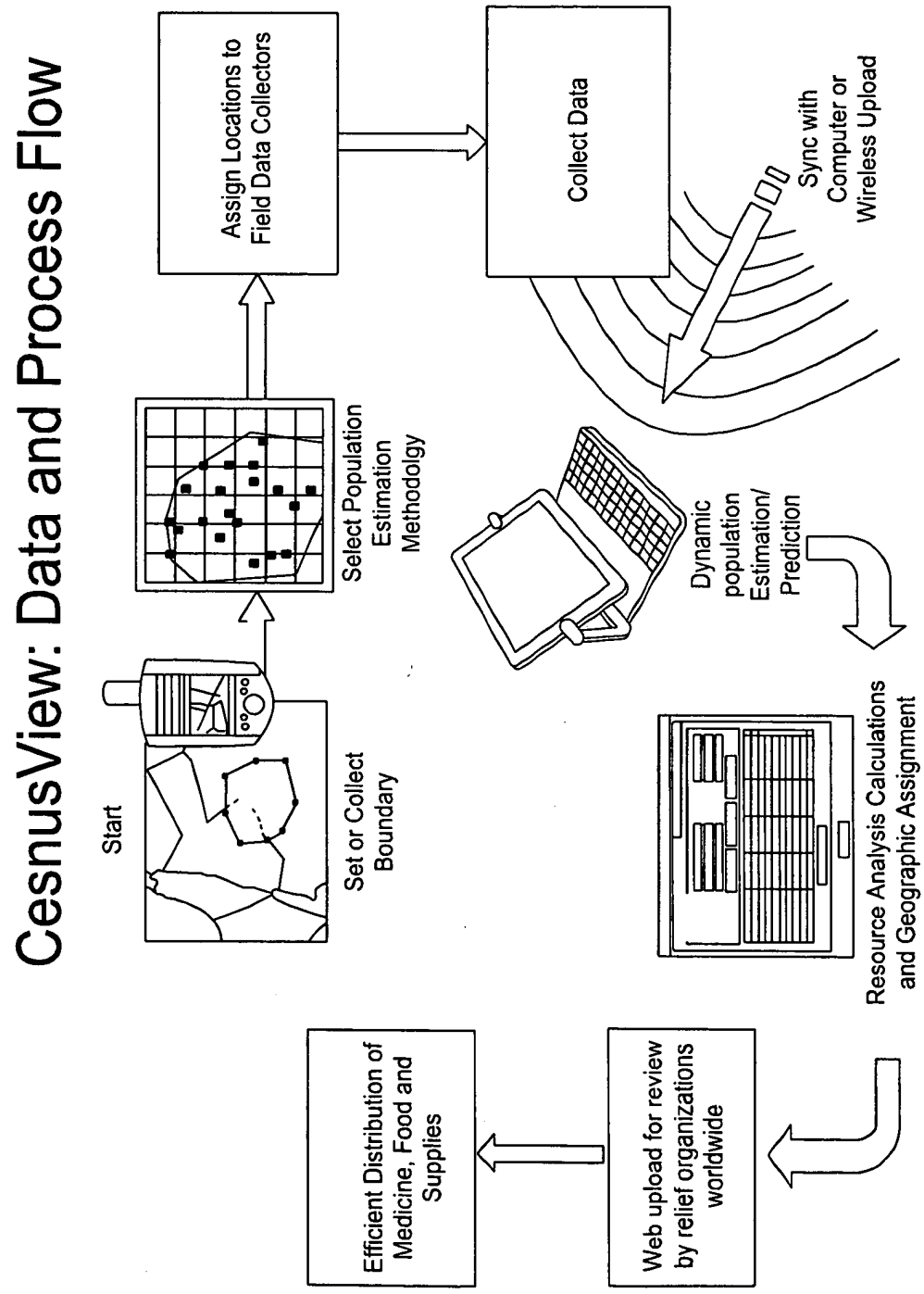
CesnusView: Data and Process Flow
Start
Set or Collect Boundary
Select Population Estimation Methodolgy
Assign Locations to Field Data Collectors
Collect Data
Sync with Computer or Wireless Upload
Dynamic population Estimation/ Prediction
Resource Analysis Calculations and Geographic Assignment
Web upload for review by relief organizations worldwide
Efficient Distribution of Medicine, Food and Supplies

FIG. 19

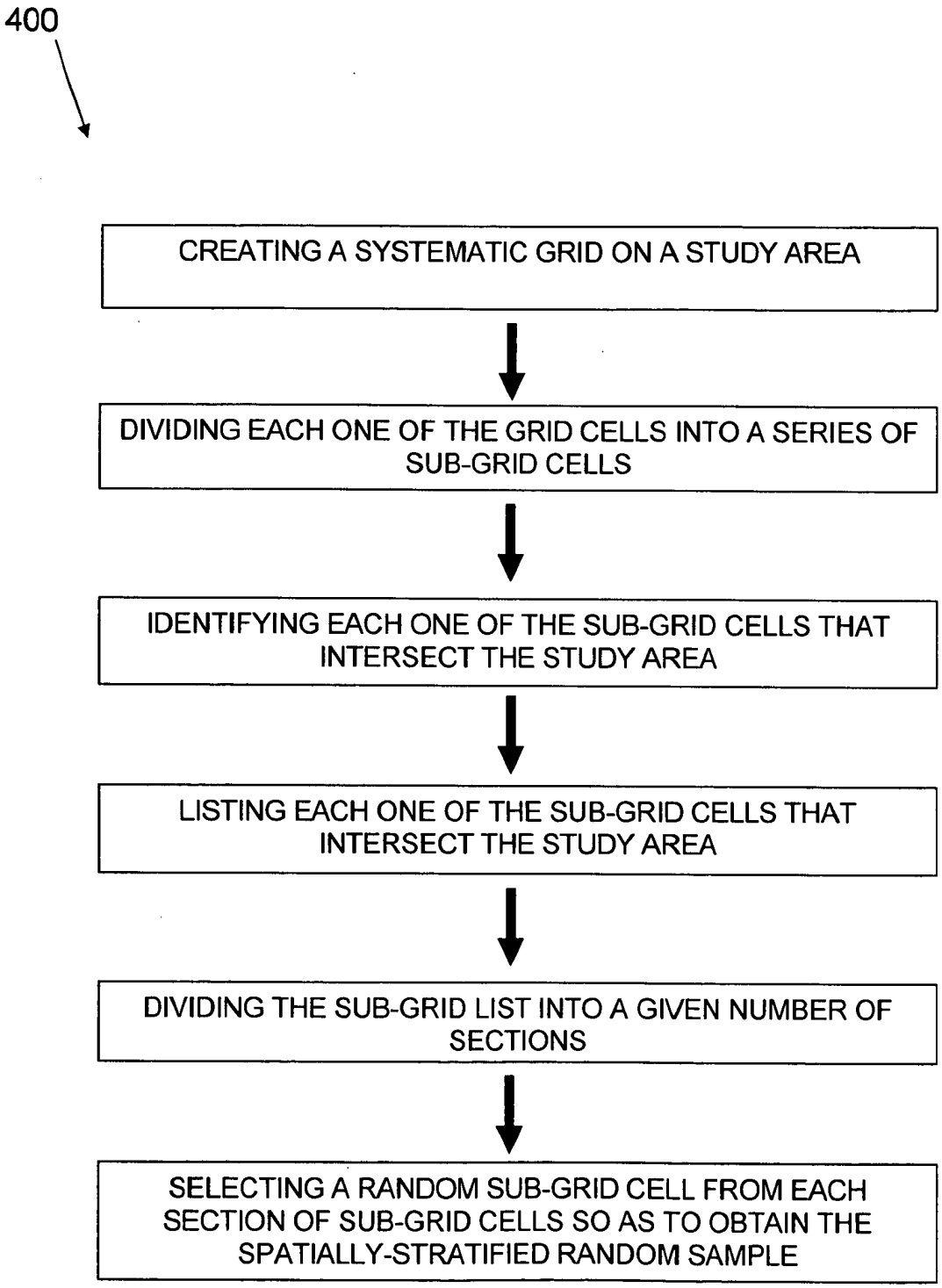
400
CREATING A SYSTEMATIC GRID ON A STUDY AREA
DIVIDING EACH ONE OF THE GRID CELLS INTO A SERIES OF SUB-GRID CELLS
IDENTIFYING EACH ONE OF THE SUB-GRID CELLS THAT INTERSECT THE STUDY AREA
LISTING EACH ONE OF THE SUB-GRID CELLS THAT INTERSECT THE STUDY AREA
DIVIDING THE SUB-GRID LIST INTO A GIVEN NUMBER OF SECTIONS
SELECTING A RANDOM SUB-GRID CELL FROM EACH SECTION OF SUB-GRID CELLS SO AS TO OBTAIN THE SPATIALLY-STRATIFIED RANDOM SAMPLE

FIG. 20

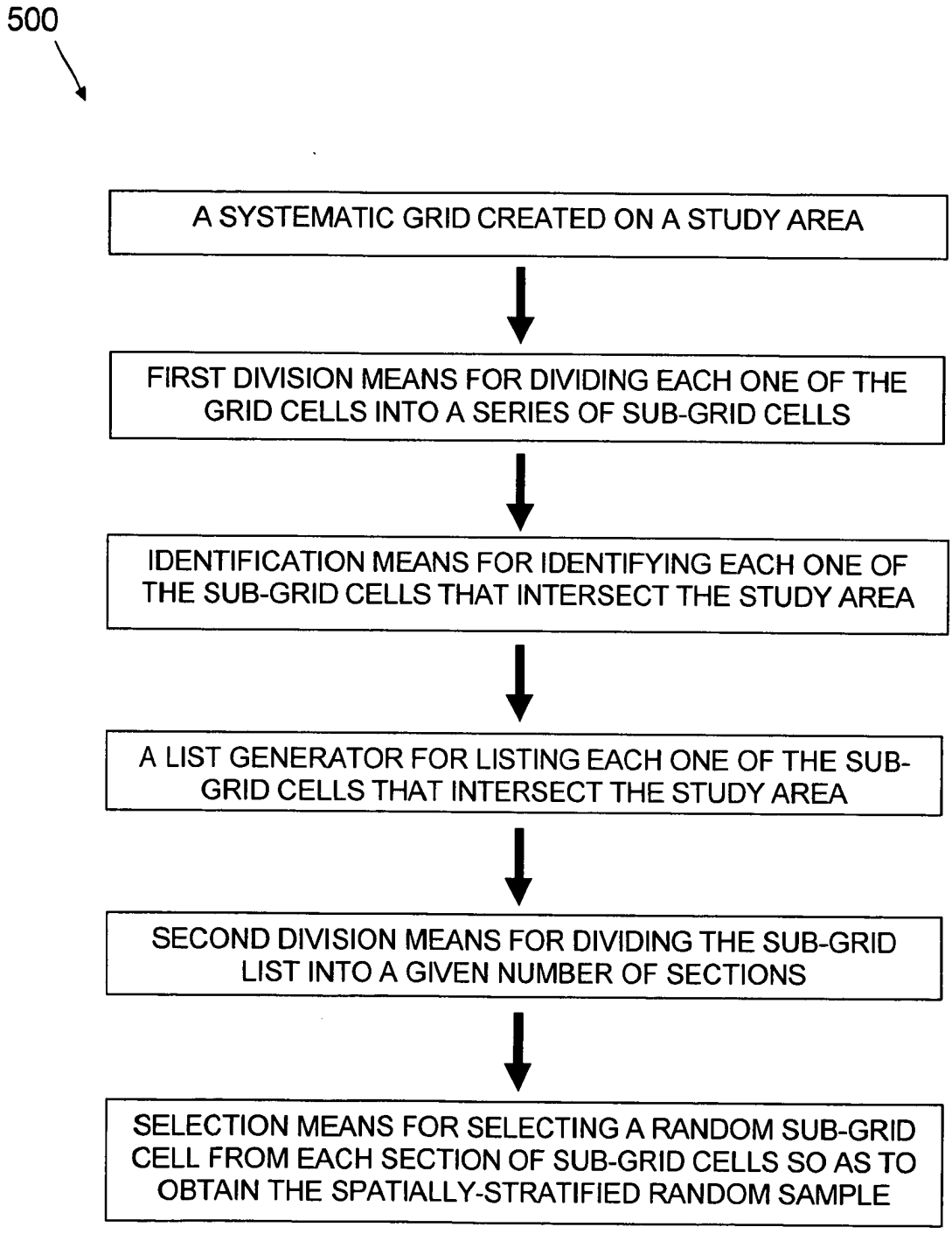
500
A SYSTEMATIC GRID CREATED ON A STUDY AREA
FIRST DIVISION MEANS FOR DIVIDING EACH ONE OF THE GRID CELLS INTO A SERIES OF SUB-GRID CELLS
IDENTIFICATION MEANS FOR IDENTIFYING EACH ONE OF THE SUB-GRID CELLS THAT INTERSECT THE STUDY AREA
A LIST GENERATOR FOR LISTING EACH ONE OF THE SUB-GRID CELLS THAT INTERSECT THE STUDY AREA
SECOND DIVISION MEANS FOR DIVIDING THE SUB-GRID LIST INTO A GIVEN NUMBER OF SECTIONS
SELECTION MEANS FOR SELECTING A RANDOM SUB-GRID CELL FROM EACH SECTION OF SUB-GRID CELLS SO AS TO OBTAIN THE SPATIALLY-STRATIFIED RANDOM SAMPLE

FIG. 21

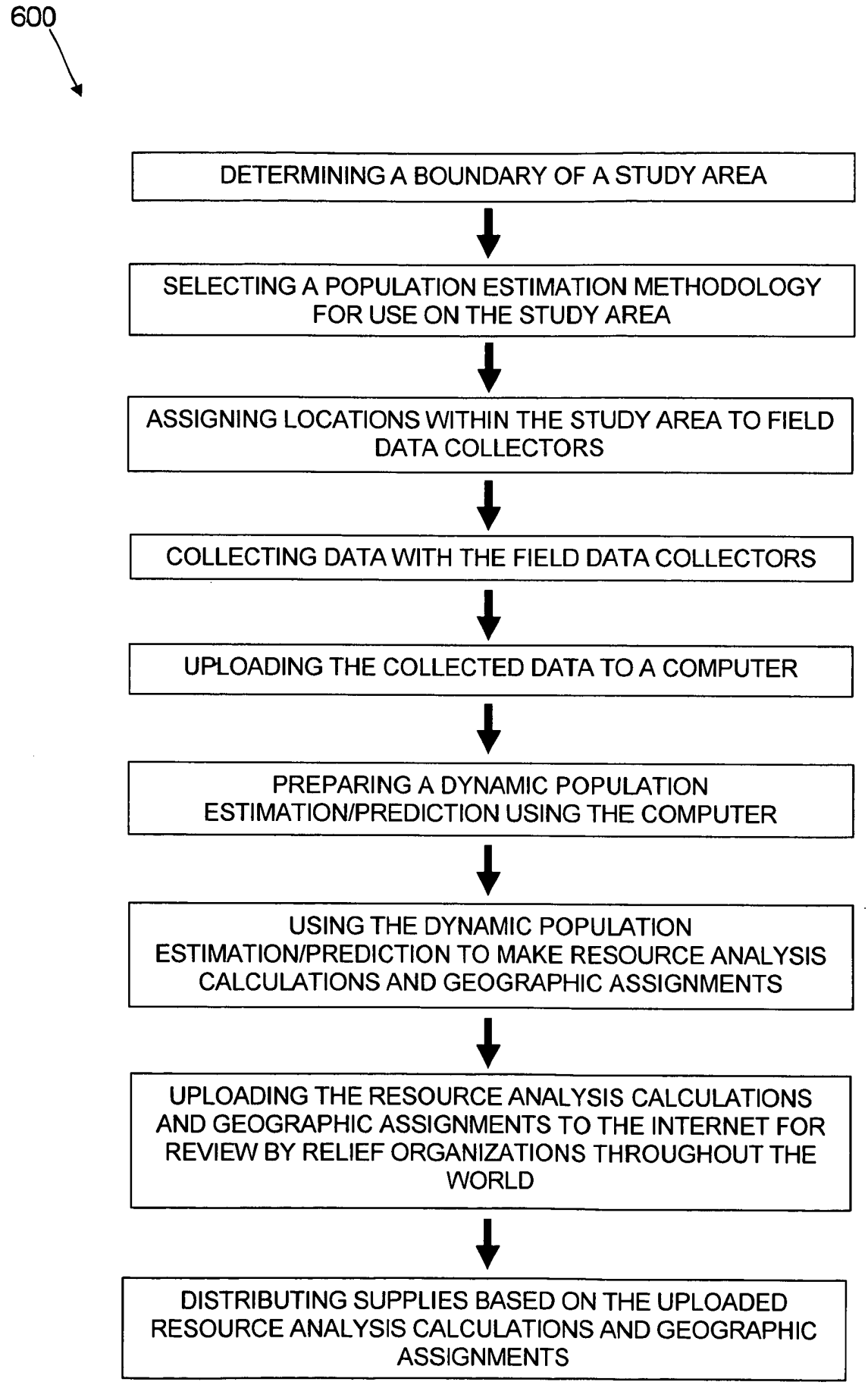
600
DETERMINING A BOUNDARY OF A STUDY AREA
SELECTING A POPULATION ESTIMATION METHODOLOGY FOR USE ON THE STUDY AREA
ASSIGNING LOCATIONS WITHIN THE STUDY AREA TO FIELD DATA COLLECTORS
COLLECTING DATA WITH THE FIELD DATA COLLECTORS
UPLOADING THE COLLECTED DATA TO A COMPUTER
PREPARING A DYNAMIC POPULATION ESTIMATION/PREDICTION USING THE COMPUTER
USING THE DYNAMIC POPULATION ESTIMATION/PREDICTION TO MAKE RESOURCE ANALYSIS CALCULATIONS AND GEOGRAPHIC ASSIGNMENTS
UPLOADING THE RESOURCE ANALYSIS CALCULATIONS AND GEOGRAPHIC ASSIGNMENTS TO THE INTERNET FOR REVIEW BY RELIEF ORGANIZATIONS THROUGHOUT THE WORLD
DISTRIBUTING SUPPLIES BASED ON THE UPLOADED RESOURCE ANALYSIS CALCULATIONS AND GEOGRAPHIC ASSIGNMENTS

FIG. 22

700

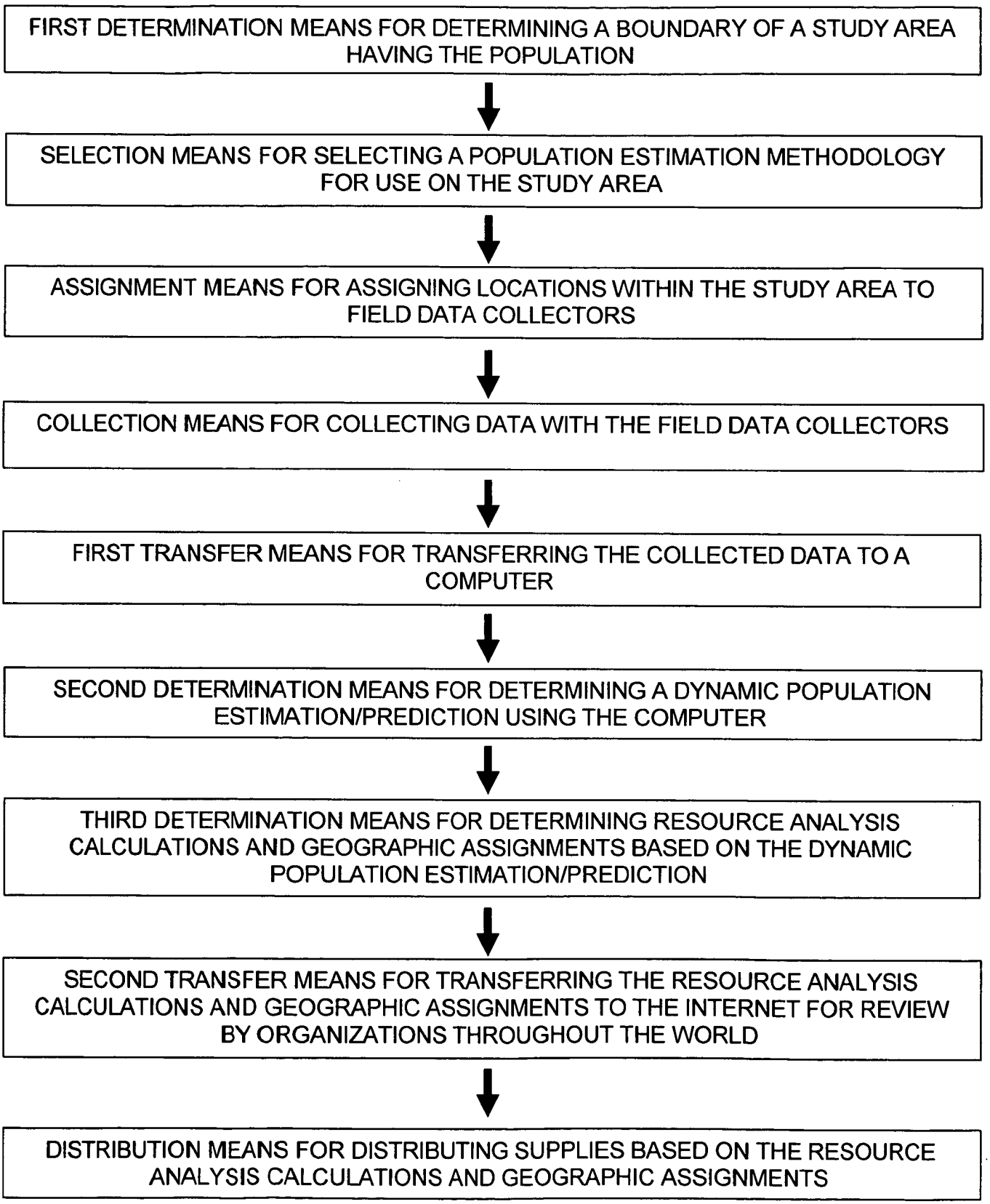
FIRST DETERMINATION MEANS FOR DETERMINING A BOUNDARY OF A STUDY AREA HAVING THE POPULATION
SELECTION MEANS FOR SELECTING A POPULATION ESTIMATION METHODOLOGY FOR USE ON THE STUDY AREA
ASSIGNMENT MEANS FOR ASSIGNING LOCATIONS WITHIN THE STUDY AREA TO FIELD DATA COLLECTORS
COLLECTION MEANS FOR COLLECTING DATA WITH THE FIELD DATA COLLECTORS
FIRST TRANSFER MEANS FOR TRANSFERRING THE COLLECTED DATA TO A COMPUTER
SECOND DETERMINATION MEANS FOR DETERMINING A DYNAMIC POPULATION ESTIMATION/PREDICTION USING THE COMPUTER
THIRD DETERMINATION MEANS FOR DETERMINING RESOURCE ANALYSIS CALCULATIONS AND GEOGRAPHIC ASSIGNMENTS BASED ON THE DYNAMIC POPULATION ESTIMATION/PREDICTION
SECOND TRANSFER MEANS FOR TRANSFERRING THE RESOURCE ANALYSIS CALCULATIONS AND GEOGRAPHIC ASSIGNMENTS TO THE INTERNET FOR REVIEW BY ORGANIZATIONS THROUGHOUT THE WORLD
DISTRIBUTION MEANS FOR DISTRIBUTING SUPPLIES BASED ON THE RESOURCE ANALYSIS CALCULATIONS AND GEOGRAPHIC ASSIGNMENTS

FIG. 23

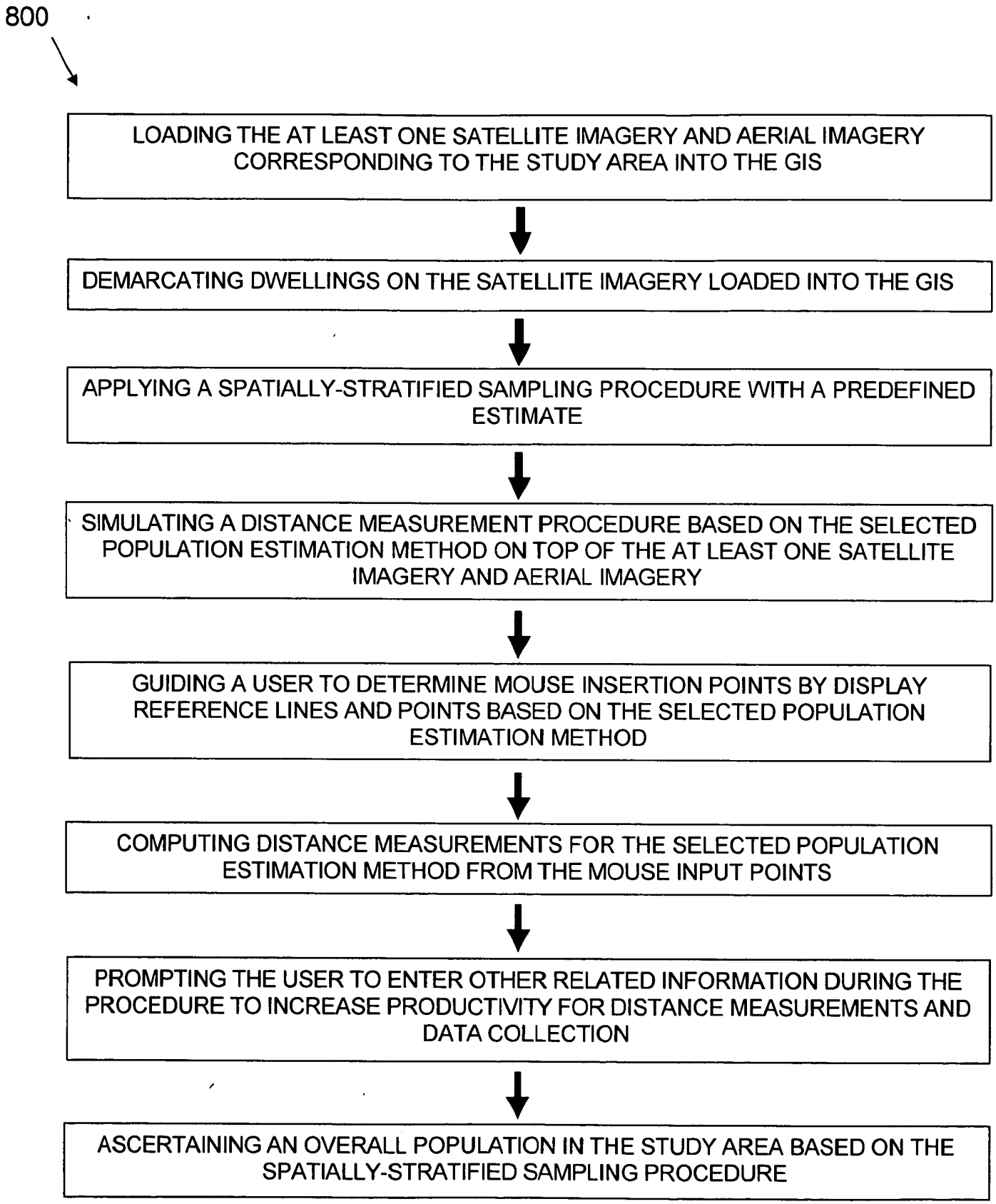
800
LOADING THE AT LEAST ONE SATELLITE IMAGERY AND AERIAL IMAGERY CORRESPONDING TO THE STUDY AREA INTO THE GIS
DEMARCATING DWELLINGS ON THE SATELLITE IMAGERY LOADED INTO THE GIS
APPLYING A SPATIALLY-STRATIFIED SAMPLING PROCEDURE WITH A PREDEFINED ESTIMATE
SIMULATING A DISTANCE MEASUREMENT PROCEDURE BASED ON THE SELECTED POPULATION ESTIMATION METHOD ON TOP OF THE AT LEAST ONE SATELLITE IMAGERY AND AERIAL IMAGERY
GUIDING A USER TO DETERMINE MOUSE INSERTION POINTS BY DISPLAY REFERENCE LINES AND POINTS BASED ON THE SELECTED POPULATION ESTIMATION METHOD
COMPUTING DISTANCE MEASUREMENTS FOR THE SELECTED POPULATION ESTIMATION METHOD FROM THE MOUSE INPUT POINTS
PROMPTING THE USER TO ENTER OTHER RELATED INFORMATION DURING THE PROCEDURE TO INCREASE PRODUCTIVITY FOR DISTANCE MEASUREMENTS AND DATA COLLECTION
ASCERTAINING AN OVERALL POPULATION IN THE STUDY AREA BASED ON THE SPATIALLY-STRATIFIED SAMPLING PROCEDURE

FIG. 24

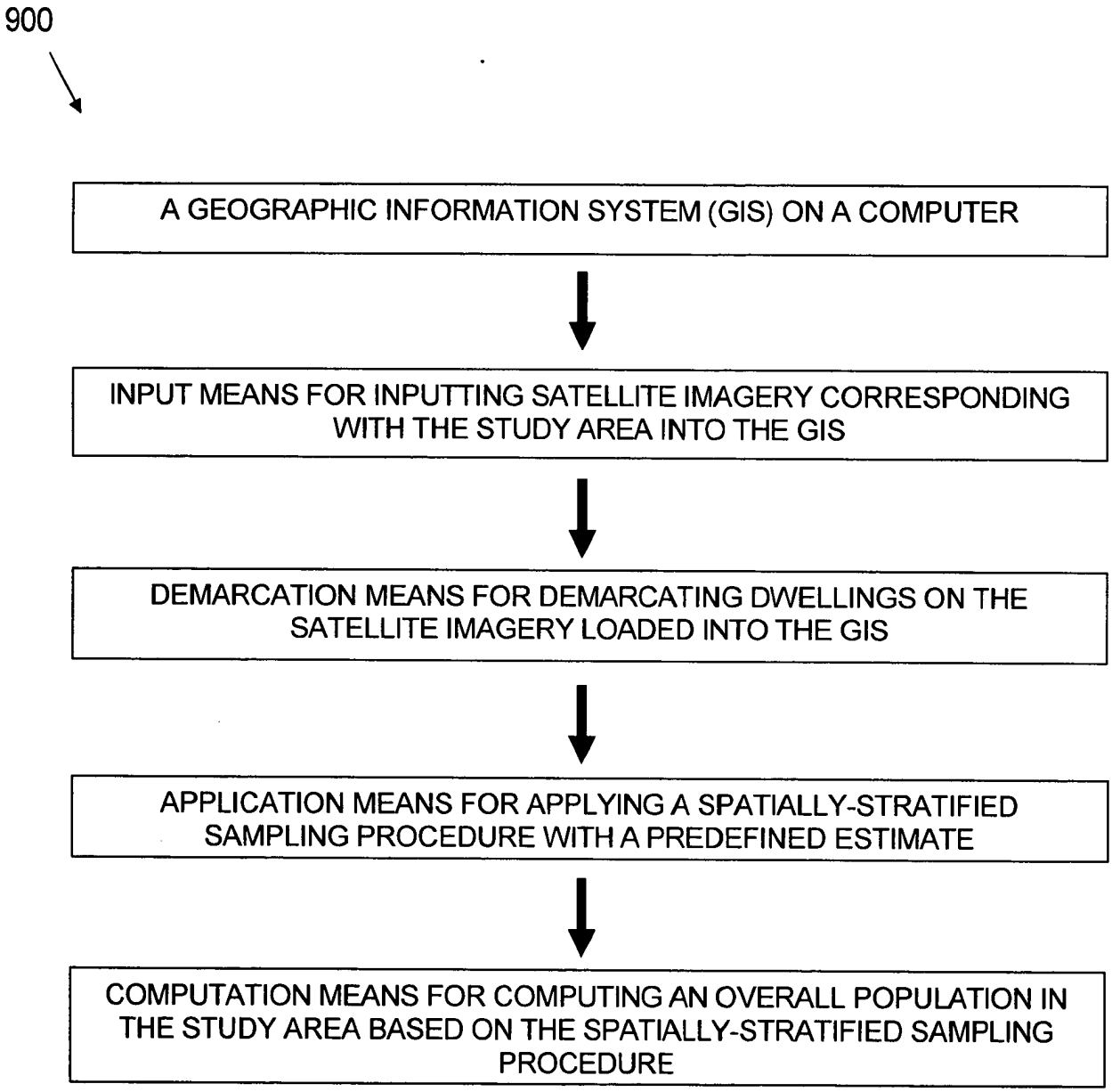
900
A GEOGRAPHIC INFORMATION SYSTEM (GIS) ON A COMPUTER
INPUT MEANS FOR INPUTTING SATELLITE IMAGERY CORRESPONDING WITH THE STUDY AREA INTO THE GIS
DEMARCATION MEANS FOR DEMARCATING DWELLINGS ON THE SATELLITE IMAGERY LOADED INTO THE GIS
APPLICATION MEANS FOR APPLYING A SPATIALLY-STRATIFIED SAMPLING PROCEDURE WITH A PREDEFINED ESTIMATE
COMPUTATION MEANS FOR COMPUTING AN OVERALL POPULATION IN THE STUDY AREA BASED ON THE SPATIALLY-STRATIFIED SAMPLING PROCEDURE

FIG. 25

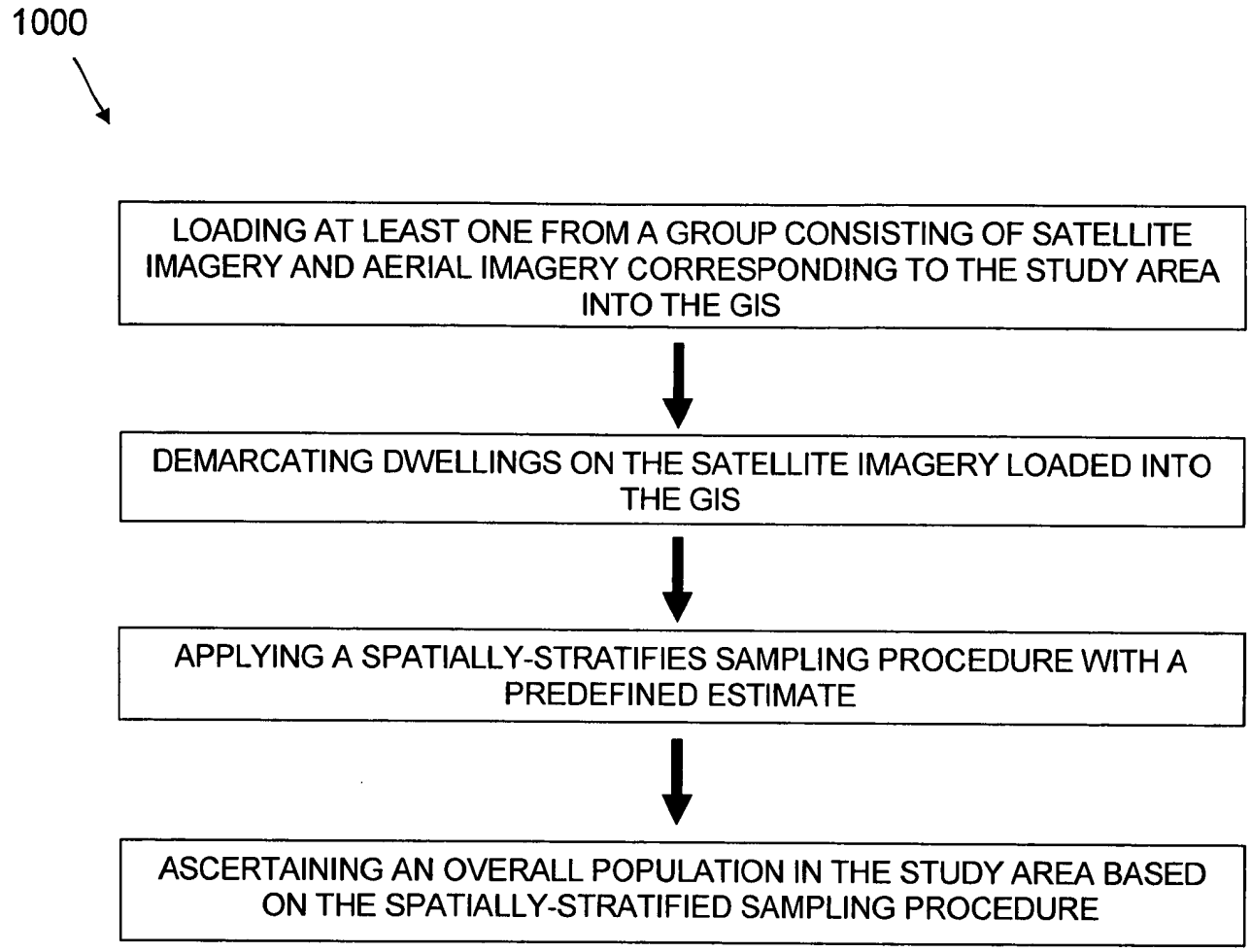
1000
LOADING AT LEAST ONE FROM A GROUP CONSISTING OF SATELLITE IMAGERY AND AERIAL IMAGERY CORRESPONDING TO THE STUDY AREA INTO THE GIS
DEMARCATING DWELLINGS ON THE SATELLITE IMAGERY LOADED INTO THE GIS
APPLYING A SPATIALLY-STRATIFIES SAMPLING PROCEDURE WITH A PREDEFINED ESTIMATE
ASCERTAINING AN OVERALL POPULATION IN THE STUDY AREA BASED ON THE SPATIALLY-STRATIFIED SAMPLING PROCEDURE

FIG. 26